

## REVISED VERSION

### Testimony of Nicholas Wade on 8 March 2023 to the House Select Subcommittee on Coronavirus Pandemic

Chairman Wenstrup and members of the committee,

Thank you for inviting me to discuss the origin of the Covid virus. I am a science writer and have worked on two leading research journals, Nature and Science, and then for 30 years on the New York Times where I was an editorial writer and the science editor. This background has given me some knowledge of how the scientific community works.

I'd like to discuss three issues of interest to the committee:

- 1) Where did SARS2, the Covid virus, come from?
- 2) Why are we taking the lab leak hypothesis seriously only now instead of 3 years ago?
- 3) How should we regulate this and other fraught research techniques that are now on the horizon?

#### Origin of the SARS2 Virus

Some say it doesn't matter where the virus came from because the pandemic is what it is. To the contrary, it matters a great deal because the two conjectured origins require widely different responses.

If the virus came from nature, virologists can carry on bringing wild viruses back into their laboratories and continue to manipulate them in the hope of preparing for new epidemics. China can assert the pandemic was a natural phenomenon for which its government bears no responsibility. The national media can say it was right all along to dismiss lab leak as a conspiracy theory and that no self-scrutiny is required.

If the SARS2 virus (also known as SARS-CoV2) leaked from a laboratory, on the other hand, the Chinese authorities should be held accountable for the pain they have inflicted on the world's population. Enhancing a virus's properties – so-called gain of function research – should probably be halted immediately until a functioning regulatory system has been devised, different from the one now in place. Journalists and editors would doubtless wish to ask how they let the wool be pulled over their eyes for so long and so effectively.

Given that the particular origin of the virus matters so much, where indeed did it come from?

When the epidemic first became recognized in December 2019, having probably begun some two months earlier, natural origin and lab leak were two

equally reasonable explanations. But if the virus had emerged naturally, it should have left many telltale signs in the environment. None has yet appeared, despite the Chinese government's keen interest in finding them. With every month that passes without such evidence, the natural origins explanation grows inevitably weaker.

For lab leak, on the other hand, the evidence has been building, thanks to work by independent scientists and Freedom of Information Act requests. Here are three of the strongest pieces of evidence in favor of lab leak.

First, the epidemic broke out not in some random city in China, nor near the bat-infested caves of southern China where the viruses are most likely to jump to people, but right in Wuhan, home of the Wuhan Institute of Virology. The institute is China's leading center for coronavirus research. We know that scientists there were genetically engineering coronaviruses under seriously inadequate safety conditions. And we know that viruses escape from labs all the time. Common sense suggests that lab leak cannot be dismissed with a wave of the hand.

Second, the possibility that the virus was made in a lab became much more concrete with the recent surfacing of a grant proposal by the Wuhan researchers and others. They applied in 2018 for a [\\$14 million grant](#) from a Pentagon program called Project DEFUSE, and this grant proposal, even though it was not funded, provides a deep insight into the exact kinds of virus manipulation the Wuhan researchers had in mind.

Now the essential ingredient of SARS2, one which makes the virus so infective, is a small genetic element known as a furin cleavage site. It's just 12 genetic units long, a tiny part of the virus's 30,000-unit genome. We know that the Wuhan researchers were planning to insert this very element into a group of coronaviruses because they say so in their DEFUSE grant proposal. And they planned to place the furin cleavage site at a specific position on the virus's genome. This position is called the S1/S2 junction because it lies between the two components of the virus's spike gene, called S1 and S2.

The DOD turned the proposal down as too risky but the researchers may well have found other ways to finance it. And they may have done much of the groundwork experimentation before applying for the grant, as is common practice.

A year later, the SARS2 virus appears on the scene and guess what – it possesses a furin cleavage site, the only known member of its large family of viruses to do so – and the cleavage site is positioned right at the S1/S2 junction.

Why should evolution produce, at that very moment in time, a virus just like those described in the DEFUSE proposal? It's surely a lot easier to believe that the Wuhan researchers did exactly what they proposed and generated the SARS2 virus in their lab. All we need for absolute proof is knowledge of the starting virus the Wuhan researchers used. Now you may see why the Chinese authorities [closed down their coronavirus database](#) on 9 September, 2019 and refused to grant the

World Health Organization or anyone else access to the work being done at the Wuhan institute. Innocent behavior would be to throw open the Wuhan Institute and all its viral samples, working papers and data bases to anyone who wanted to look. The Chinese authorities have done the opposite.

A third reason for inferring that SARS2 came from a lab has to do with the biology of its furin cleavage site. This gets a little technical, but is not hard to follow, and it's the evidence most persuasive to many scientists, including those who first told NIAID director Anthony Fauci on 31 January, 2020, that the SARS2 virus was engineered.

The argument goes in several steps. First is that viruses in nature often acquire new chunks of genetic material like the furin cleavage site. They do so when two very similar viruses enter a cell at the same time. Both viruses hijack the cell's production machinery but their progeny viruses then get assembled with bits and pieces belonging to the other. The process is called recombination.

Two viruses have to be very similar for the parts of one to work well in the other, which is why recombination takes place pretty much between viruses of the same family.

SARS2 belongs to a sub-family of coronaviruses called Sarbecoviruses. Of the hundreds of Sarbecoviruses so far known, only one has a furin cleavage site – SARS2. The virus is very unlikely to have acquired its furin cleavage site by recombination for the simple reason that no other member of its family possesses one.

Those who favor natural origin suggest there could be as yet undiscovered Sarbecoviruses that contain a furin cleavage site. Possibly, but until such a virus is discovered that's just a self-serving conjecture. And there's another problem. The genetic units in an organism's genome code for the amino acid elements in the proteins of which the organism is composed. But the coding system is flexible and some amino acids can be coded for in several different ways. Living organisms are not indifferent to these various coding possibilities. Each species has its own, characteristic coding preferences. And the SARS2 furin cleavage site does not have coronavirus preferences as it should do if acquired naturally. It has human coding preferences, as it would if assembled from a lab kit.

(Specifically, the SARS2 furin cleavage site uses the nucleotide sequence CGG to code for the amino acid arginine. CGG is a preferred human coding for arginine but uncommon in SARS2. In fact the cleavage site specifies two arginines side by side, coded for by the sequence CGG-CGG which, when in the correct frame, is unknown in coronaviruses).

These facts about the furin cleavage site are not absolute proof that SARS2 came from a lab, because evolution is always producing what seem as improbabilities to our eyes. But they are pretty indicative of lab origin – see the comments below from Fauci’s advisory team. And taken with the two arguments above, namely the epidemic’s emergence in Wuhan and the DEFUSE proposal, there’s a strikingly good circumstantial case that the SARS2 virus escaped from the lab where it was being genetically enhanced.

On the natural origin side, there has from the beginning been one big argument in its favor, namely that many epidemics have indeed emerged naturally when viruses spilled over from animals to people. The SARS1 virus jumped from bats to an intermediate host, civets, which were sold in wet markets, and from them to people. But three years after the Covid epidemic began, no specific evidence of natural origin has come to light. With the SARS1 epidemic of 2002, natural origin was established within a few weeks.

Proponents of a natural origin for SARS2 have made much of a [recent report](#) that all the earliest recorded cases of Covid were clustered in or around the Wuhan wet market, and that an infected animal housed there must therefore have been the origin of disease, just as in the case of SARS1. But first, the authors failed to find a single infected animal, so there is no evidence that it was an animal that introduced the virus to the market. An infected person is the more likely source, especially as the epidemic probably began silently, two months before the cases recorded from the wet market. Second, the early cases are clustered round the market not because that was their origin but because the Chinese authorities, believing they had a repeat of the SARS1 epidemic on their hands, [made closeness to the market a criterion](#) for recognizing victims of the new disease. If you had SARS2 but no association with the wet market, you weren’t counted in these early statistics. So of course all the apparent early cases cluster round the market, a misleading finding due to what is known as ascertainment bias.

Even Chinese researchers decline to pinpoint the Wuhan wet market as the source of the Covid epidemic. A [recent paper](#) authored by George Gao, then head of the Chinese CDC, noted that “no virus was detected in the animal swabs covering 18 species of animals in the market” and that the origins of SARS2 “remain to be determined.” If you can’t carry even the Chinese with a natural origin argument, better try something else.

### The Campaign to Discredit Lab Leak

But if the evidence for lab leak is so strong, why do so many people still believe the virus came from nature? There were several reasons. The natural

origin camp got its story out first, always a big advantage. With [a letter in the Lancet](#) of 19 February, 2020, it successfully painted lab leak as a conspiracy theory, and a highly influential [letter in Nature Medicine](#) on 17 March 2020 emphatically declared that “SARS-CoV-2 is not a laboratory construct or a purposefully manipulated virus.”

Scientists, easily kept in line because of their dependence on government grants, hesitated to dispute a position that had the backing of powerful scientific officials, such as Fauci and Francis Collins, then director the National Institutes of Health. Hearing few or no dissident voices from the scientific community, the national media swallowed the natural origin story unskeptically. Science journalists in particular, it seems to me, fell down on their job. They failed to challenge the authors of the *Nature Medicine* paper, to wonder if their conclusions were self-serving, to perceive how thin their scientific reasoning was, or to pay the slightest attention to critics on the other side of the issue.

All too soon the issue of the virus’s origin became politicized, a gigantic distraction from looking at the actual facts. Journalists were far happier writing about political differences than codon preferences. Few reporters made the mental effort to understand Yuri Deigin’s [brilliant analysis](#) of how the SARS2 virus could have been put together, published as early as 22 April 2020; it was so much easier to dump on President Trump for referring to the “Wuhan virus” by its place of origin. Chinese authorities were doubtless delighted to see us fighting each other instead of scrutinizing the scientific evidence relating to their profound mishandling of coronavirus research. It would be unsurprising if they should turn out to have had a major hand in the discord, such as by influencing coverage in scientific journals like *Nature* whose publishers have significant sales in China.

For all these reasons, natural origin became the conventional wisdom, and the possibility of lab leak languished in obscurity for some 18 months.

### The Campaign to Discredit Lab Leak

The natural origin theory did not prevail by accident. It was promoted by science administrators in the United States and England, including Collins and Fauci of the National Institutes of Health and Jeremy Farrar, then director of the Wellcome Trust in London, a large research funding organization.

The NIH is a national treasure and Collins and Fauci, its most prominent leaders at the time, are well known to the public and on Capitol Hill. It’s hard to believe that in the twilight of their long careers they would seriously mishandle an issue as important as Covid. Unfortunately that is what the evidence suggests on two levels, both the investigation of SARS2’s origin and the overall regulation of gain of function research. Consider first their reaction to being told by their experts at the very beginning of the epidemic that SARS2 was a manipulated virus.

On the evening of January 31, 2020, Fauci received [an email from 4 virologists](#) led by Kristian Andersen of Scripps Research. We “all find the genome inconsistent with expectations from evolutionary theory,” he wrote, meaning that the SARS2 virus could not have been made in nature.

Fauci was perhaps not too pleased to hear that the virus might have escaped from research that his agency had funded. A strange thing happened to the virologists’ conclusion. Within four days, Andersen, in [an email of February 4th](#), repudiated it, deriding lab leak as a crackpot theory.

What made him change his mind? No new scientific evidence about the virus came to light between January 31 and February 4. But from that 180-degree reversal a whole campaign was able to develop, including the highly influential articles in *Nature Medicine* and the *Lancet*.

The first step was a teleconference held on 1 February and organized with lightning speed by Farrar, of the Wellcome Trust. Emails relating to the conference and discussions over the following 9 days started to become available in June 2021 through several Freedom of Information Act Requests, often after prolonged litigation with the NIH. These emails suggest that the purposes of the teleconference were 1) to stage a scientific debate in which European virologists who strongly supported gain of function research would raise doubts about the Andersen group’s conclusion, 2) to produce plausible data for the American virologists to justify their change of mind, and 3) to initiate the writing of a paper that would discredit the possibility of lab leak.

The emails show how strongly two other members of Andersen’s 4-member group believed SARS2 had been manipulated. Robert F. Garry of Tulane University remarked on the fact that the inserted furin cleavage site, a string of 12 units of RNA, the virus’s genetic material, was exactly the required length, a precision unusual in nature. “I just can’t figure out how this gets accomplished in nature ... it’s stunning. Of course, in the lab it would be easy to generate the perfect 12 base insert that you wanted,” the [emails quote him as saying](#).

Michael Farzan of Scripps felt much the same way. “He is bothered by the furin cleavage site and has a hard time explain[ing] that as an event outside the lab (though, there are possible ways in nature, but highly unlikely),” Farrar reported. Farzan noted that viruses can acquire elements like furin cleavage sites when grown in cultures of human cells, so “instead of directed engineering...acquisition of the furin site would be highly compatible with the continued passage of virus in tissue culture.” Both routes, direct insertion of the cleavage site or tissue culture, would mean the virus came from a lab.

As for Andersen, the teleconference may have come as a rude shock. He could reasonably have expected high praise for his group’s important finding about



the virus's origin. He discovered that however correct the finding might be scientifically, politically it was a blunder that required immediate repudiation.

"I see that road to Damascus conversion occurring during the February 1 teleconference," [says Richard Ebright](#), a molecular biologist at Rutgers University who has long criticized gain-of-function virology research. "They felt they had found something really important and their funding agency would be proud of it too, but on the teleconference they learned the opposite. They felt Fauci would really want to know, but it's the last thing he wanted to know."

Andersen got the message. In [an email of February 8](#), he told the others that "Our main work over the last couple of weeks has been focused on trying to *disprove* any type of lab theory." So much for any open-minded inquiry into the virus's origins.

Collins had closed his mind on the subject a whole week earlier. In an email of 2 February he derided the idea of lab leak as a "voice of conspiracy" and complained about the damage it might cause. "The voices of conspiracy will quickly dominate, [doing great potential harm to science and international harmony](#)," he wrote to Farrar and Fauci.

What brought Collins to this conclusion? The best and only information in his possession was surely the Andersen group's report of just two days previously saying the virus was manipulated. He had no scientific data to believe otherwise. It seems that the possible damage to science and US-Chinese relations took precedence in his mind over his public duty to establish the origin of the SARS2 virus. Closer to home, both he and Fauci could be subject to criticism if it turned out that the NIH had funded research that had caused or contributed to the epidemic.

The email trove contains a further pertinent exchange between Collins and Fauci, revealing of Collins' lively interest in burying the lab leak hypothesis before it could gain wings. Even after the *Lancet* and *Nature Medicine* articles had appeared, Collins still fretted that the lab leak idea had not been sufficiently suppressed. "Wondering if there is something NIH can do to help put down this very destructive conspiracy," he emailed on 16 April 2020 to Fauci.

Fauci was less concerned. "I would not do anything about this right now," he replied the next day. "It is a shiny object that will go away in times." His contempt for the media he knew so well was not unjustified. For over a year the nation's reporters and editors lost all interest in the incandescently shiny object they had been directed to ignore.

An interesting feature of the emails is the apparent attempt to establish a credible alibi for Andersen's 180-degree reversal on lab leak.<sup>1</sup> Only new scientific

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<sup>1</sup>This passage is adapted from my recent [article](#) in *City Journal*.

data could justify the Andersen team's switch from lab leak to the opposite conclusion. And the best possible evidence would be the finding of a virus very similar to SARS2 that had infected some animal host. A virus that differed by less than 1 percent would be a plausible ancestor of SARS2, because it could have evolved into SARS2 reasonably quickly and then jumped from its animal host to people, just as the SARS1 virus had done. And Farrar had just such a surprise to pull out of his hat at the right moment.

"Reports coming out overnight that Chinese group have pangolin viruses that are 99% similar," Farrar emailed the others on February 7. "This would be a crucially important finding and if true could be the 'missing link' and explain a natural evolutionary link," he explained. It would indeed. If true.

Both Farrar and the fourth member of Andersen's group, Edward Holmes, who is at the University of Sydney in Australia, have close connections with Chinese health officials. Could they have asked their Chinese colleagues for any data helpful to the cause of discrediting lab leak? Whether or not there was any such coordination, the Chinese needed no encouragement to help undermine the idea of lab leak.

"The strain isolated from pangolin is 99% similar to the new coronavirus strain," a perfectly timed press release from the South China Agriculture University [reported](#) on February 7, just as Farrar had announced. The pangolin data were highly uncertain and preliminary. But why subject them to zealous scientific scrutiny when they supported the conclusion that everyone now wanted? "Personally, with the pangolin virus possessing 6/6 key items in the receptor binding domain, I am in favour of the natural evolution theory," Holmes wrote in an email of February 8.

On that basis, further discussion seemed unnecessary. The draft of the Nature Medicine paper was wrapped up and [posted online 8 days later](#). The colossal embarrassment of discovering that Chinese researchers funded by Fauci's agency had unleashed the deadly Covid epidemic on the world was averted. What was not to like?

Nothing except that the pangolin data that had driven the whole process were misleading and unreliable. Far from being 99 percent similar to SARS2, as Farrar had assured the teleconference participants, the coronavirus found in pangolins was in fact even less similar than RaTG13, a coronavirus sequence the Chinese had already published. The pangolin viruses contained no furin cleavage site, so had no relevance to the principal anomaly in the SARS2 sequence. The pangolin data were not new, as Farrar had implied, but [had been made available](#) on the website virological.org on January 23. And for all the weight placed on them by the email participants, the pangolin data had many inconsistencies. One of the preprints in which the data were presented was so bad it never got published in a



journal. The other was posted by the Chinese on February 20, only after the text of the *Nature Medicine* article was in near-final form. This was the unverified data used to dismiss the quite substantial evidence already available in favor of the lab-leak hypothesis. And all the email participants just went along with it.

As for the Andersen reversal paper, it was submitted to *Nature*, [which rejected it](#), apparently for the hilarious reason that the European virologists asked to review it complained they were not given sufficient credit for their part in disabusing the American virologists of their belief in the lab-leak thesis. The manuscript was then passed down to *Nature Medicine*, a subsidiary journal.

For all Farrar's fanfare about the pangolin data, Andersen in fact seems to have set little store by it. In an email obtained by this committee, Andersen told *Nature's* editors, in response to a referee who advised greater weight be put on the pangolin data, that in fact they didn't amount to much. "Unfortunately, the newly available pangolin sequences do not elucidate the origin of SARS-CoV-2 or refute a lab origin," Andersen wrote.

So why again did Andersen change his 31 January conclusion that SARS2 had been manipulated in a laboratory? Given that there is no new scientific evidence to which he and his co-authors can convincingly point, it's reasonable to look for other possible sources of persuasion. Fauci and Farrar between them controlled much of the money available for virology research in the western world. No virologist hoping for a long career would lightly incur their anger. In any event, the Andersen group abruptly walked back their conclusion of 31 January. Andersen, Garry and Holmes coauthored the *Nature Medicine* recantation; only Farzan, of the original four, declined to take part in it.

Only when this row-back was safely in press did Andersen receive the praise he may have first expected, though for the opposite reason. "Nice job on the paper," [Fauci wrote](#) him on 8 March 2020. And another pleasant surprise soon followed: on 21 May 2020, Andersen's lab, with Garry as a subcontractor, was awarded [a \\$9 million grant](#) from Fauci's agency. The grant was from a virus-hunting program called CREID, prompting some speculation about Andersen's and Garry's good behavior in earning it. "Was this the CREID pro quo?" asked Ebright.

The *Nature Medicine* article was published online on 17 March 2020. Its statement that lab leak was impossible dominated public opinion for more than a year. Only in June 2021, when the first of the emails about the teleconference became public, did serious cracks begin to appear in the story. Before then, the only dissenters were a handful of independent scientists who gathered data which mainstream scientific journals like *Nature* and *Science*, firm advocates for natural

origin, repeatedly rejected or inordinately delayed. The skeptics included Yuri Deigin, Gilles Demaneuf, Steven Quay, Monali Rahalkar, The Seeker and other members of the DRASTIC collective. Ebright was for many months the only establishment scientist to voice strong doubts about the natural origin thesis, along with a courageous and eloquent postdoctoral student, Alina Chan of MIT. They were later joined by other independent voices such as David Relman of Stanford and the economist Jeffrey Sachs of Columbia. Apologies to the many I have overlooked in this brief informal sketch of the opposition movement.

It was their efforts that gradually supplied the arguments to challenge the anti-lab leak campaign. Other events helped. An inquiry committee convened by the World Health Organization returned from Beijing and reported in March 2021 that natural origin was the most probable source of the virus. But this was not quite the propaganda victory the Chinese authorities may have hoped for. It became clear that China had not been able to provide the WHO committee with a single piece of evidence favoring natural origin.

On the reporting front, [an article](#) by Ian Birrell in the Daily Mail on 2 January 2021 and a fine [piece by the novelist Nicholson Baker](#) in New York Magazine on 4 January were the first to lay out the strong case for lab leak. The articles didn't receive the attention they deserved because they were overshadowed by certain events on Capitol Hill two days later. A [long essay](#) by the present writer on 02 May 2021 appeared at a more auspicious moment and attracted over a million page views, followed by an uptick of media interest in the possibility of lab leak.<sup>2</sup> On 26 May President Biden asked the intelligence agencies to investigate the origins of the virus, a sign that the issue was no longer closed in favor of natural origin. The reported findings of the intelligence agencies have amounted to a sit-on-fence posture, perhaps so as to keep relations with Beijing below boiling point. Several fine reporters have continued the story, such as Mara Hvistendahl, Emily Kopp, Katherine Eban, Rowan Jacobsen, and Matt Ridley, but the mainstream media, to the best of my knowledge, has still not presented the full case for lab leak to the general public.

### Regulating Hazardous New Science

Beyond the issue of the SARS2 virus lies a broader and more challenging question, that of how to regulate promising but hazardous scientific techniques. The gold standard for handling the risk of fraught new research techniques is the

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<sup>2</sup> The media analyst David [Rozado states that after this article](#) the "gradual pickup in media interest provides suggestive, but ultimately circumstantial, evidence about whether this particular event could have triggered increased media coverage of the lab-leak hypothesis."

Asilomar conference of 1975 which was convened to consider the new ability to transfer genes from one organism to another, sometimes known as gene splicing. The organizers wanted a public airing of the issue, including benefits and risks. They then decided, against the wishes of many researchers, to impose stiff initial safety standards with the idea they could be relaxed if the hazards proved less than feared. And this is what happened. By regulating themselves, the molecular biologists gained public trust and made outside regulation unnecessary.

Gain of function – the enhancement of a virus’s natural ability to infect people or cause disease – is another novel technique of obvious possible hazard. Fauci and Collins have long been proponents of such research. “Important information and insights can come from generating a potentially dangerous virus in the laboratory,” they [wrote in the Washington Post](#) in 2011. But there has been no Asilomar-type public discussion to guide its regulation.

Instead, the control of the technique was kept inside the NIH, although since 2018 a committee in the office of the Secretary of HHS is required to review projects. However, the P3CO committee, as it is known, can only review projects that the NIH identifies and submits to it. Most of the projects it should have submitted, [in the view of Richard Ebright](#), were not flagged by the NIH, including the manipulation of SARS and MERS-related coronaviruses by the Wuhan Institute of Virology. Indeed the P3CO committee has reviewed only three projects in the last five years. In addition, Ebright notes, “the HHS P3CO Committee has operated with complete non-transparency and complete unaccountability. The names and agency affiliations of its members have not been disclosed, its proceedings have not been disclosed, and even its decisions have not been disclosed.”

Could better regulation have helped avoid the covid pandemic? The research that NIH funded in Wuhan does not seem to have received adequate scrutiny. Nor is it clear how Fauci’s office, based in Bethesda, could properly supervise the safety of the hazardous research his agency funded in Wuhan, especially when the funding was channeled through an intermediary, the EcoHealth Alliance of New York.

An obvious question is why the NIH, before letting any of its grantees initiate gain of function research, didn’t hold an Asilomar-style conference so as to get the best possible scientific input into how the research should be conducted. The Cambridge Working Group, composed of biologists critical of gain of function experiments, [warned of the dangers](#) of enhancing viruses in 2014, saying that laboratory creation of new viruses “could trigger outbreaks that would be difficult or impossible to control.”

The group recommended an Asilomar process to assess the risk and assure the highest level of safety. According to Ebright, a member of the group, Fauci and

Collins said it was a great idea but would have to be organized through NIH to be effective. The Cambridge Working Group accepted the plan, but then nothing happened. “In retrospect it seems clear that Fauci and Collins, from the start, wanted only to sideline the Cambridge Working Group and never intended to move forward with the process,” Ebright says.

He now believes that virologists’ intense opposition to extra safety rules makes any form of self-regulation unworkable. A policy of “unenforceable frameworks and sham simulacra of self-regulation” has not worked, in his view, and should be replaced with reviewers independent of NIH and backed by force of law.

Virologists are well aware of the threat of new regulation bearing down on their field. A recent [article in the Journal of Virology](#), with 156 signatories, poured cold water over the lab leak hypothesis and its “paucity of evidence,” complained about the “ill-informed condemnation of virology” that has resulted, and sang the praises of gain of function research which has been “an extremely valuable tool in the development of vaccines and antivirals.”

The article then listed the extensive regulations to which virologists are already subject and urged that no more be added. “Regulations that are redundant with current practice or overly cumbersome will lead to unwarranted constraints on pandemic preparation and response and could leave humanity more vulnerable to future disease outbreaks.”

It's true that regulation is costly and inefficient, and that it's much better for groups to regulate themselves than to struggle under the heavy hand of outside overseers. The problem here is that virologists have missed their chance. However bothersome the regulations already in place, they didn't work. They failed to prevent the NIH grantees at the Wuhan Institute of Virology from manipulating SARS-related coronaviruses in BSL-2 level safety conditions, which should have been against the rules but was not. The evidence for lab leak is not sparse, as the 156 virologists assert, but pretty substantial. Ebright is surely right: the time has passed for virologists to be allowed to regulate themselves.

Other scientific communities have been better led. You can hear active public discussions about practical uses of the Crispr technique of gene editing, and of another fraught technology, that of gene drives. These scientific groups are acting openly and ethically and there's very little present need for outsiders to intervene. Gain of function research, however, got off the ground on the wrong foot and there needs to be developed a better scientific and regulatory consensus about the terms on which it can proceed.